

REMARKS

Claim Amendments

Claims 1, 11 and 18 have been amended to recite the fluidized bed conveyor as being an air slide as described at page 12, lines 18-20 of the specification. New claims 21-23 have a basis at page 12, line 11 of the specification.

35 U.S.C. 103(a) Rejections

Claims 1, 3, 5-11, 13-18 and 20 were rejected under 35 U.S.C. 103(a) as being obvious over U.S. Patent No. 5,556,447 to Srinivasachar *et al.*, U.S. Patent No. 5,245,120 to Srinivasachar *et al.*, U.S. Patent No. 5,803,663 to Matsuyama *et al.*, U.S. Patent No. 6,399,851 to Siddle, U.S. Patent No. 6,416,567 to Edlund *et al.*, "Regeneration of activated carbon used in the adsorption of mercury and organomercury compounds in waste gases" to Zemskov *et al.*, EP 380467 to Fercher *et al.*, JP 04-061981 to Fujita, JP 07-155722 to Hamaguchi *et al.*, JP 07-155723 to Hamaguchi *et al.*, DE 19801321 to Hoermeyer *et al.*, JP 2003-154233 to Okada, and Research Disclosure 470003 "Treatment of mercury in fly ash by the CBO process" to Cochran *et al.*, U.S. Patent No. 5,280,701 to Tolman, and line 6, page 8 of Applicants' specification. In view of the above amendments, and the remarks below, reconsideration is respectfully requested.

First, looking at amended independent claims 1, 11 and 18, the claimed methods now include the step of depositing the material being treated (e.g., activated carbon) on an air slide floor having openings and passing heated flowing air through the openings to move the amount of sorbent from a beginning to an exit area of the air slide. The claimed method is advantageous in that the material being treated is conveyed and

treated at the same time. It is submitted that this new feature of amended independent claims 1, 11 and 18 is not shown or suggested in the cited references. Also, new claims 21-23 further describe the air slide floor as being "sloping" to illustrate another means for conveying the particulate materials.

An air slide is one way to move particulate materials such as fly ash and activated carbon. However, conventional air slides operate at ambient or the handled material's temperature without heat input. In the present invention, the air slide has been improved to accept heated flowing air through openings in the air slide floor to move the amount of sorbent from a beginning to an exit area of the air slide, wherein the flowing air is passed through the openings until the particulate matter reaches a temperature of at least 700°F and mercury compounds are liberated from at least some of the particulate matter.

U.S. Patent No. 5,556,447 to Srinivasachar *et al.* describes processes for treating wastes contaminated by toxic metals. Among other things, this patent describes heating mercury-laden carbon in a small purge air flow (column 10, lines 22-26). However, this patent does not teach or suggest moving the amount of sorbent from a beginning to an exit area of an air slide during heating as recited in amended independent claims 1, 11 and 18. Thus, the claimed invention provides advantages over the processes of this patent which do not allow for simultaneous heating and conveying.

U.S. Patent No. 5,245,120 to Srinivasachar *et al.* describes processes for treating wastes contaminated by toxic metals. However, this patent does not teach or suggest moving the amount of sorbent from a beginning to an exit area of an air slide

during heating as recited in amended independent claims 1, 11 and 18. Thus, the claimed invention provides advantages over the processes of this patent which do not allow for simultaneous heating and conveying.

U.S. Patent No. 5,803,663 to Matsuyama *et al.* describes processes for treating soils contaminated by mercury. Heating is accomplished in a crucible in a heat reaction vessel (column 4, lines 44-46). Thus, this patent does not teach or suggest moving the amount of sorbent from a beginning to an exit area of an air slide during heating as recited in amended independent claims 1, 11 and 18. Therefore, the claimed invention provides advantages over the processes of this patent which do not allow for simultaneous heating and conveying.

U.S. Patent No. 6,399,851 to Siddle describes the treatment of contaminated substrate materials such as soil, sludge, sediments, drilling muds and cuttings with heat. The heating is carried out indirectly in an extraction chamber with externally applied heat (column 3, lines 57-60). Thus, this patent does not teach or suggest moving the amount of sorbent from a beginning to an exit area of an air slide during heating as recited in amended independent claims 1, 11 and 18. Therefore, the claimed invention provides advantages over the processes of this patent which do not allow for simultaneous heating and conveying.

U.S. Patent No. 6,416,567 to Edlund *et al.* describes processes for treating wastes contaminated by mercury. Heating is accomplished in an oven with a screw auger (column 3, lines 47-56). Thus, this patent does not teach or suggest moving the amount of sorbent from a beginning to an exit area of an air slide during heating as recited in amended independent claims 1, 11 and 18. Therefore, the claimed invention

provides advantages over the processes of this patent which do not allow for simultaneous heating and conveying.

The abstract for the article entitled "Regeneration of activated carbon used in the adsorption of mercury and organomercury compounds in waste gases" by Zemskov *et al.* describes a process for treating activated carbon contaminated by mercury. This abstract describes heating mercury-laden carbon in a nitrogen flow. However, this abstract does not teach or suggest moving the material being treated along an air slide during the heating as recited in amended independent claims 1, 11 and 18. Thus, the claimed invention provides advantages over the process of this abstract which does not allow for simultaneous heating and conveying.

The abstract for EP 380467 to Fercher *et al.* describes a process for treating dust residues contaminated by, among other things, mercury. This abstract does not teach or suggest moving the material being treated along an air slide during the heating as recited in amended independent claims 1, 11 and 18. Thus, the claimed invention provides advantages over the process of this abstract which does not allow for simultaneous heating and conveying.

The abstract for JP 04-061981 to Fujita describes a process for treating incinerator ash and addresses several metals including mercury. Animal bone powder and clay is used for making an adsorbent and calcined at 1000°C. Heating is accomplished in a rotating kiln operating within a range of 1000°C to 1500°C. This abstract does not teach or suggest moving the material being treated along an air slide during the heating as recited in amended independent claims 1, 11 and 18. Thus, the

claimed invention provides advantages over the process of this abstract which does not allow for simultaneous heating and conveying.

The abstract for JP 07-155722 to Hamaguchi *et al.* describes a process for treating incinerator ash for dioxin and mercury. Heating is accomplished in an oven with a screw auger 8. This abstract does not teach or suggest moving the material being treated along an air slide during the heating as recited in amended independent claims 1, 11 and 18. The claimed invention provides advantages over the process of this abstract which does not allow for simultaneous heating and conveying.

The abstract for JP 07-155723 to Hamaguchi *et al.* describes a process for treating incinerator ash for dioxin and mercury. Heating is accomplished in an oven with a screw auger 8. This abstract does not teach or suggest moving the material being treated along an air slide during the heating as recited in amended independent claims 1, 11 and 18. Therefore, the claimed invention provides advantages over the process of this abstract which does not allow for simultaneous heating and conveying.

The abstract for DE 19801321 to Hoermeyer *et al.* describes the treatment of mercury contaminated soils. This abstract does not teach or suggest moving the material being treated along a conveyor by way an air slide during the heating as recited in amended independent claims 1, 11 and 18. Thus, the claimed invention provides advantages over the process of this abstract which does not allow for simultaneous heating and conveying.

The abstract for JP 2003-154233 to Okada describes a process for treating activated carbon contaminated by mercury. However, this abstract does not teach or suggest moving the material being treated along an air slide during the heating as

recited in amended independent claims 1, 11 and 18. Thus, the claimed invention provides advantages over the process of this abstract which does not allow for simultaneous heating and conveying.

The Research Disclosure 470003 entitled "Treatment of mercury in fly ash by the CBO process" by Cochran *et al.* describes a process using a large fluidized bed furnace. This abstract does not teach or suggest moving the material being treated along a conveyor by way of an air slide during the heating as recited in amended independent claims 1, 11 and 18. Thus, the claimed invention provides advantages over the process of this abstract which does not allow for simultaneous heating and conveying.

U.S. Patent No. 5,280,701 to Tolman describes the use of a fluidized bed combustor. Tolman does not teach or suggest moving the material being treated along an air slide during the heating as recited in amended independent claims 1, 11 and 18. Thus, the claimed invention provides advantages over the process of Tolman which does not allow for simultaneous heating and conveying.

In summary, it is respectfully submitted that all of the elements and limitations of amended independent claims 1, 11 and 18 are not shown or suggested in the cited references. Accordingly, it is believed that amended independent claims 1, 11 and 18 (and the remaining claims that depend thereon) are patentable over the cited references.

The citation of *In re Dilnot*, *In Re Lincoln*, *Dow v. Coe*, and *In re Korpi* in the Office Action has been noted. However, it is submitted that the guidance of these cases

does not apply to amended independent claims 1, 11 and 18 which recite elements not shown in the prior art.

In *In re Dilnot*, a rejection of a claim reciting continuous introduction of foam material into a mixture was upheld in view of prior art showing batch introduction of the foam material into a mixture. Other than continuous introduction of foam material to the mixture, the remainder of the process was shown in the prior art. Thus, all elements of the claimed invention were shown except for the “continuous” limitation. In the present application, an air slide is now recited in the claims that is not even shown in the prior art of record. Thus, *In re Dilnot* is distinguishable.

Likewise, in *In Re Lincoln*, a rejection of a claim reciting continuous introduction of nitrogen trichloride into a process was upheld in view of prior art showing batch introduction of the nitrogen trichloride into the process. Thus, all elements of the claimed invention were shown except for the “continuous” limitation. In the present application, an air slide is now recited in the claims that is not even shown in the prior art of record. Thus, *In re Lincoln* is distinguishable.

In *Dow v. Coe*, a secondary reference showing a continuous process was used in upholding the rejection. In the present application, a secondary reference showing an air slide is not cited. Thus, *Dow v. Coe* is distinguishable.

In *In re Korpi*, secondary references showing continuous alkylation were used in upholding the rejection. In the present application, a secondary reference showing an air slide is not cited. Thus, *In re Korpi* is distinguishable.

In re Tatinclox has been cited for the rule that no invention is involved in the broad concept of performing simultaneously operations which have previously been

performed in sequence. However, in the present application, a secondary reference showing an air slide is not cited. Thus, *In re Tatinclox* is distinguishable.

Therefore, it is respectfully submitted that the case law citations in the Office Action do not support an obviousness rejection for amended independent claims 1, 11 and 18 (and the remaining claims that depend thereon).

Conclusion

It is believed that the entire application has been placed in condition for allowance.

Other than the extension fee, no fees are believed due. However, if any other fees are needed, please charge them to deposit account 17-0055.

Respectfully submitted,

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